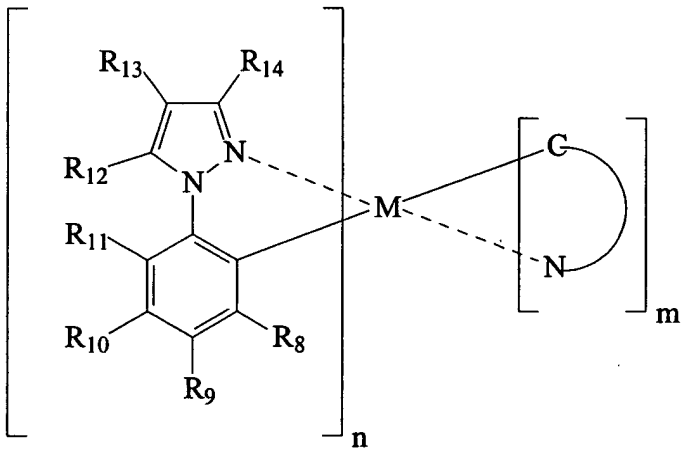
Abstract:

An organic light emitting device is provided. The device has an anode, a cathode, and an emissive layer disposed between and electrically connected to the anode and the cathode. The emissive layer may further include a compound with the following structure:



wherein

M is a metal having an atomic weight greater than 40;

(C-N) is a substituted or unsubstituted cyclometallated ligand, and (C-N) is different from at least one other ligand attached to the metal;

each R is independently selected from hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, CF_3, CO_2R, C(O)R, NR_2, NO_2, OR, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl, or a heterocyclic group;

additionally or alternatively, any two adjacent substituted positions together form, independently, a fused 4- to 7-member cyclic group, wherein said cyclic group is cycloalkyl, cycloheteroalkyl, aryl, or heteroaryl, and wherein the 4- to 7-member cyclic group may be optionally substituted with substituent R;

m may have a value of at least 1;

n has a value of at least 1; and where n is 3, R is not a cyano group;

m + n is the maximum number of ligands that may be attached to the metal.

The emissive layer may further include a compound comprising a metal bonded to at least a first ligand and a second ligand, in which the first ligand has a triplet energy corresponding to a wavelength that is at least 80 nm greater than the wavelength corresponding to the triplet energy of other ligands. The compound may have only one first ligand bound to the metal. Each ligand may be organometallic.

The emissive material may have enhanced electroluminescent efficiency and improved lifetime when incorporated into a light emitting device.